

REMARKS

Claims 22-26 are currently pending in the application. Only claim 22 is in independent form.

Claims 22-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or in the alternative under 35 U.S.C. § 103(a) as obvious over European Patent 439898. Reconsideration of the rejection is respectfully requested.

The Office Action states that EP '898 teaches that one skilled in the art could have provided a hose with a braided glass fiber thereon. Prior to application of the glass fiber onto the tubing, the reference suggested that one skilled in the art would have applied a fluoropolymeric dispersion onto the glass fibers employed in the braid. By performing this step, the finished tubing was provided with the dispersion, which completely coated and embedded the glass fiber braid disposed about the extruded tubing. The Office Action concludes that despite the presently pending claims reciting two separate dispersion coatings, that there is no reason to believe that the product produced by the process disclosed in EP '898 would have been any different from the product as presently claimed. Further, the Office Action states that the presently pending claims recite that any gaps from the braided fibers were filled with the dispersion of the second coating. The Office Action concluded that coating the fibers prior to braiding the fibers would have resulted in a finished assembly that had the gaps between the braided fibers filled as shown in Figure 2 of EP '898 and disclosed at column 4, lines 39-41. However, it is respectfully submitted that at column 4, lines 30-32 of EP '898 there is stated, "the fluorocarbon polymer solution or dispersion coats each individual glass fiber 18 of the braided layer 18." Further, at lines 35-45, there is disclosed that,

"the outer periphery of each individual fiber is completely coated prior to application to the liner. The solvent is removed from the solution by drawing after the fibers are applied about the inner liner 16. This leaves a fluorocarbon polymer material or coating 20 dispersed throughout the braided layer 18. By coating

each fiber of the braided layer 18 prior to braiding or weaving the material about the liner 16, a strong bond between the fibers 18 and the liner 16 is achieved.”

It is respectfully submitted that there is no teaching or suggestion in the EP ‘898 patent that indicates the gaps between the fibers of the braided layer would be filled just because each individual fiber is coated prior to braiding. Additionally, while Figure 2 does depict a braided hose similar to that of the presently pending independent claims, there is no disclosure in the prior art that indicates that the end result of the hose would be a smooth outer surface. This is counter-intuitive with the process that is disclosed throughout EP ‘898. Instead, as recited in the attached declaration by Norman Martucci, the resultant braided hose has a bumpy surface wherein gaps between the fibers of the braid are found. Specific support for this observation is found at column 4 of the cited prior art at lines 10-20 wherein it discloses that, “the assembly is constructed in accordance with the method of the instant invention, the coating 20 covers the fibers of the braided layer 18 from the outer periphery of the layer 18 radially inward. The coating, therefore, preferably does not extend radially outward from the outer periphery of the braided material 18.” In other words, the braided fibers themselves are completely encapsulated by a dispersion, but the dispersion does not extend beyond the periphery or outer surface of the braided material. Instead, the braid itself is embedded with the dispersion, such that the braided fibers can then be applied to the surface of a liner and the dispersion within the fibers of the braid enables the braid to be adhered to the surface of the liner. There is no disclosure in the specification, nor is there any suggestion in the specification that dipping of the fibers in the dispersion prior to braiding achieves a bond between fibers of the braid such that there are no gaps between fibers of the braid. It is actually further counter-intuitive to believe the gaps would be filled, since the EP ‘898 patent discloses at column 3, lines 29-32 that, “the braided fibers may be tightly woven or they may be loosely woven in an inter-weaving fashion having wide gaps between adjacent fibers.” Thus, there is no indication that it was ever contemplated by the inventors of the EP ‘898 patent that anything aside from gaps would be present in the braided layer. Instead, it is assumed that these gaps would exist.

In contradistinction, the presently pending independent claims claim that the second dispersion fills in gaps between adjacent fibers. The presently pending independent claims require that these gaps be filled in order to ensure that the braid is properly affixed to the inner liner. This “double dip” process enables the braided layer to be adhered to the inner liner and that there be no gaps between fibers of the braided material. There is no suggestion or disclosure of this in the EP ‘898 patent. Accordingly, reconsideration of the rejection is respectfully suggested.

Claims 22-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 380841 in view of any one of Arterburn, Busdiecker, Haren, Mathews, Gray et al., or Brumbach optionally further taken with Green.

The Office Action states that EP 380,841 taught that it was known at the time the invention was made to form a fluorocarbon tubular core member and braid upon the same. The Office Action states that it was notoriously well known in the braiding art to apply a coating to a tube prior to braiding followed by an application of the second coating in order to ensure complete encapsulation of the braided material within the coating material as evidenced by Arterburn, Busdiecker, Haren, Mathews, Gray et al., or Brumbach.

When read more specifically, the Brumbach patent discloses using multiple layers of adhesive because more than one braided layer was utilized and in order for the braided layers to be affixed to one another, adhesives were required. The Office Action further states that the Brumbach patent teaches an adhesive layer 15 applied to the liner and an adhesive layer 17 applied to the braided material 14 after the braiding operation. However, there is recited that, “surrounding the inner tube, is a first tubular braided reinforcing sleeve 12, in which the plurality of strands 14 have been preferably machine braided about the inner tube, using a regular weave, and an adhesive material 15.” Further, there is stated that “superimposed over the first braided layer may be a second reinforcing tubular braided layer 16 woven in substantially the same manner as the first braided layer. Layer 12 is preferably bonded to layer 16 by a film

17 of adhesive material of a similar composition to that of film 15.” Thus, as stated previously, the Brumbach patent only teaches using a second layer of adhesive material if necessary to affix a second braid.

The Arterburn patent discloses multiple layers of braiding for reinforcement of the tube. Additionally, the Arterburn patent discloses in column 2, lines 54-55 that, “where multiple layers of reinforcement are to be twined onto the tube, additional steps may be employed.” Later in the paragraph there is disclosed that, “if additional bonding is required between the outer reinforcement layer 20 and tube 22, the hose may pass through a further adhesive dip applicator 42.” Multiple adhesives are only utilized when multiple layers of reinforcement are to be included on the tube. Thus, there is no disclosure for using multiple layers of adhesive without the use of multiple braids. It is obvious to utilize multiple layers of adhesive because multiple braiding layers are used. Absent the use of multiple layers of braiding, there would be no need for multiple layers of adhesive because a single braided layer only needs to be affixed to an inner liner using a single layer of adhesive.

The Mathews patent discloses encapsulating the fibers of the braided material, braiding that material, and then utilizing an encapsulating adhesive material about the braid to affix the braided layer to the inner liner. However, there is no disclosure of the “double dip” method of the present invention. The Office Action states that the Mathews patent discloses two coats of adhesive 15 applied to the tube 10, one prior to braiding and one after braiding the material 14 in order to encapsulate the braid therein (see paragraph 5, lines 1-70). However, it is respectfully submitted that there is no disclosure for multiple layers of adhesive for adhering a single braided layer. Instead, the single layer of adhesive is designed so that a thick layer of adhesive is applied, a braid is placed thereover, and the adhesive can be soaked into the braid. There is no disclosure for the use of an adhesive layer that fills gaps between the fibers of the braided layer.

The Haren and Gray et al. patents disclose the use of multiple layers of adhesive because more than one braided layer was utilized and in order for the braided layers to be affixed to one another, adhesives were required; and multiple layers of braiding were required for reinforcement of the tube. According to the Office Action, the Haren patent discloses a tube 11 initially coated with adhesive 13A prior to braiding layer 12A, which was subsequently coated with another adhesive layer 45A and that the application of layer 45A ensured a complete bond in the finished tube. It is respectfully submitted that at column 5, lines 29-32, "there is disclosed that the adhesive layer 45 provides a tenacious bond between the braided layers 12A and 14A regardless of the materials employed to make such braided layers." There is no disclosure for the use of the adhesive layer for anything other than to bond a second braided layer to a first braided layer. With regard to the Gray patent, the Office Action states that adhesive layers 14 and 18 are applied to tube 12 and the braid 16. However, when read more specifically at column 2, lines 34-40, the hose includes "a cylindrical cord tube 12, a layer 14 representing a portion of the expanded polymeric cushion matrix, a first wire reinforcement layer 16 telescope thereover, optional second layers of cushion matrix 18 and telescope wire reinforcement 20 and an outer protective sheath or cover 22." There is no disclosure for the use of two layers of adhesive to affix a single braided layer. All that is disclosed is that multiple layers of adhesive can be used to affix multiple braids. It is obvious to utilize multiple layers of adhesive because multiple braiding layers are used. Absent the use of multiple braid layers, there would be no need for multiple layers of adhesive because a single braided layer only needs to be affixed to a single inner liner. Therefore, it has been shown that it is clearly known to those of skill in the art that when multiple layers of braiding are utilized, that multiple layers of adhesive must be used to adhere braided layers to the previous layers. There is no disclosure in any of the prior art patents for using more than one layer of adhesive for affixing a single braided layer.

Further, the Green patent specifically states that a single dip is utilized wherein the inner liner is dipped through material and then the glass fibers of a braid are added about the dispersion coated inner liner. The assembly is then heated to

remove fluid and there is created a sufficiently cured fluorocarbon polymer material containing thereabout a braided layer. The method described is precisely what has been repeatedly taught in the prior art, that a single layer of dispersion can be used to apply a braided layer to an inner liner. There is no teaching in the prior art that multiple layers of the dispersion need to be applied when a single braided layer is used in a hose assembly. The present invention remarkably provides the use of a "double dip" method, as is disclosed and claimed, for better bond strength and better flexibility of the hose. This is unexpected because it was common knowledge to those of skill in the art that the single dipping method would provide sufficient adherence of the braided layer to the inner liner. It is not known to those of skill in the art to utilize the "double dip" method. Instead, it was well known to those of skill in the art to use a single adhesive layer to apply a single braided layer to an inner liner. Multiple layers of adhesive were only utilized when more than one layer of braiding was applied to the hose. As stated in all of the prior art patents, multiple adhesive layers were utilized when a multiple braiding layers were applied. For example, if two layers of braiding were utilized, two layers of adhesive were utilized to affix the braids to the underlayers. There is no disclosure in any of the prior art patents to use an additional layer on top of the adhesive layers for affixing all of the braids to the inner hose. Since none of the prior art patents, alone or in combination, teach or suggest the hose assembly of the present invention, the present invention is patentable over the prior art, and reconsideration of the rejection is respectfully requested.

The remaining dependent claims not specifically discussed herein are ultimately dependent upon the independent claims. References as applied against these dependent claims do not make up for the deficiencies of those references as discussed above. The prior art references do not disclose the characterizing features of the independent claims discussed above. Hence, it is respectfully submitted that all of the pending claims are patentable over the prior art.

In view of the present amendment and foregoing remarks, reconsideration of the rejections and advancement of the case to issue are respectfully requested.

The Commissioner is authorized to charge any fee or credit any overpayment in connection with this communication to our Deposit Account No. 11-1449.

Respectfully submitted,

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